

PARTIAL TRANSLATION OF JP 2003-101031 A

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Title of the Invention: ACTIVE ELEMENT AND DISPLAY ELEMENT  
HAVING THE SAME

Patent Application Number: 2001-290937

Filing Date: September 25, 2001

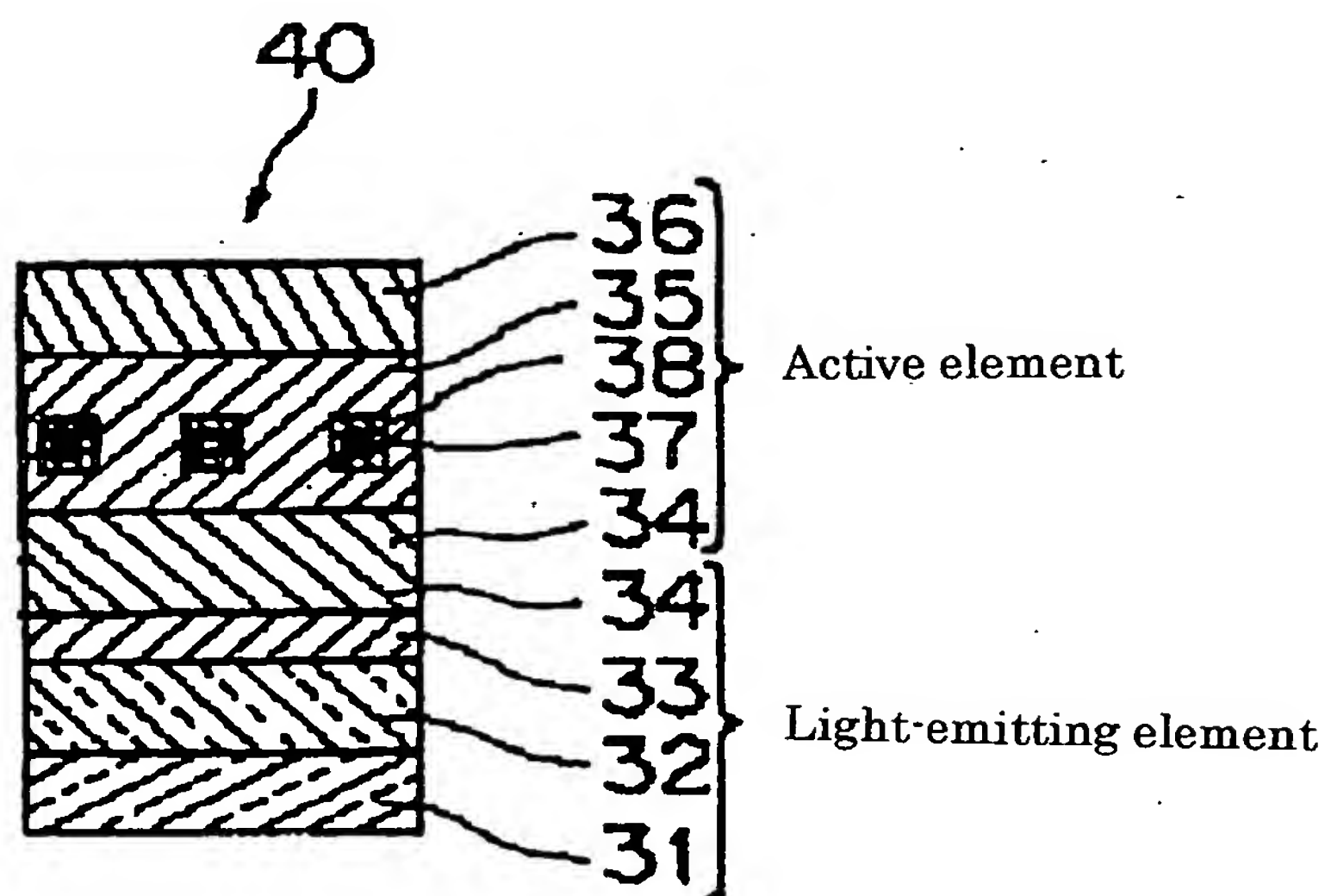
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Applicant: RICOH CO., LTD.

(Page 8, left column, line 48-right column, line 8)

[0046] A display element of the present invention is shown in Figure 8, for example. In Figure 8, reference numeral 40 denotes a display element. The display element 40 includes a substrate 31, a transparent electrode 32, an organic EL material layer 33, and an electrode (negative electrode) 34 sequentially, as a light-emitting element, and includes the electrode (source electrode) 34, a (n-type) semiconductor layer 35, and a drain electrode 36, as an active element. In a substantially central portion of the (n-type) semiconductor layer 35, a plurality of rod-like spaced gate electrodes 37 are laminated substantially in parallel with the electrode (source electrode) 34 and the drain electrode 36. Each of the gate electrodes 37 is fully coated with a semiconductor thin film formed of a p-type semiconductor.

[Fig. 8]



# ACTIVE DEVICE AND DISPLAY DEVICE HAVING THE SAME

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- international: G09F9/30; G09F9/35; H01L27/095; H01L29/43; H01L29/80; H01L51/00; G09F9/30; G09F9/35; H01L27/085; H01L29/40; H01L29/66; H01L51/00; (IPC1-7): H01L29/80; G09F9/30; G09F9/35; H01L27/095; H01L29/43; H01L51/00

- european:

Application number: JP20010290937 20010925

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## Abstract of JP2003101031

**PROBLEM TO BE SOLVED:** To provide an active device whose light emission intensity can be controlled for improving the uniformity of the light emission intensity, and to provide a display device having the active device.

**SOLUTION:** This active device comprises a source electrode 1, a semiconductor layer 2, and a drain electrode 3 which are successively layered, a plurality of rod-type gate electrodes 4 or one doughnut-shaped gate electrode are arranged approximately on the central part of the semiconductor layer 2 with intervals, approximately in parallel with the source electrode 1 and the drain electrode 3, and the current of the active device is controlled by an electrical signal. A current flowing between the source electrode and the drain electrode flows approximately in the vertical direction. The relation between the number of the gate electrodes and a channel width in the cross section of the active device satisfies the inequality  $\text{channel width } (\mu\text{m}) - (\text{gate electrode width } (\mu\text{m}) \times \text{the number of gate electrodes}) / \text{the number of gate electrodes} > 0.2 \mu\text{m}$ .

